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Measuring Achievement Motivation Among Farmers

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THE PROBLEM

Social scientists overwhelmingly agree that one must understand social values before understanding human behavior. The present bulletin deals with one of these social values, achievement motivation. Purpose of this publication is (1) to report methodological progress in measuring achievement motivation in field interviewing situations among farmers, and (2) to suggest future directions for improved measurement of achievement motivation.

Social values are standards of desirability shared by a number of individuals and regarded as matters of collective welfare by an effective consensus of the group; they specify what should and should not be done by various kinds of persons in various kinds of situations (7, pps. 42 and 400).

It is generally assumed that farmers share the major value orientations present within American society. As farming becomes more mechanized and specialized, it will behoove the farmer to make decisions which will maximize his satisfactions with his farm operation and in turn contribute to agricultural adjustment for the good of American society. Since it is generally agreed that values serve the individual as criteria by which he selects alternatives, the importance of studying farmer's social values is paramount.

During a recent conference on "Goals and Values in Agricultural Policy," sponsored by the Center for Agricultural and Economic Adjustment at Iowa

*This bulletin is a publication from Ohio Agricultural Experiment Station Research Project Hatch 264, "Assessment of the Dominant Values of Ohio Farmers and Their Relationship to Decision-Making."

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State University, sixteen economists and sociologists stressed the importance of values of farm people in determining future agricultural adjustments and policies. Although social values of farmers are central in explaining their behavior, they are extremely difficult to measure. There is a definite need to devote considerable research effort to the development of reliable and valid indices of social values. The present bulletin deals with the measurement of one social value, achievement motivation.

Achievement motivation is that value, instilled in the individual through the socialization process, in which the individual feels a need or a desire to excell in reaching certain goals only for the satisfaction of reaching the goal and not for the rewards of the goals or ends involved.* McClelland felt that achievement motivation, also called need for achievement (n Achievement or n Ach), is the most important social value in successful entrepreneurship and in national economic growth or decline. Williams (7, p. 419) summed up the necessity for research on achievement motivation.

> Adequate research evidence is not yet available to allow an accurate appraisal of the extent to which...achievement has moved to the center of the values of our culture. Such evidence is greatly needed, for the question thus raised is fundamental to any real diagnosis of the current value-system.

McClelland said that some individuals "...are characterized in greater degree than others by the 'achievement motive'" (3,p. 11). He further stated "...that sources of change in the economic system lay outside the system itself" (i.e., in social values) and that "achievement motivation is in part responsible for economic growth."

*Need for achievement, McClelland (3, p. 76) said, is the desire to do well, not so much for the sake of social recognition or prestige, but to attain an inner feeling of personal accomplishment.

The basic theoretical model explaining the importance of achievement motivation research among farmers is diagrammed in the following paradigm:

1. Causes of High Levels of Achievement Motivation (Levels of education; type of childhood training; cultural themes in children's literature; emancipation of women; etc.)	→	2. Achievement Motivation (A social value emphasizing high levels of excellence)	→	3. Individual Excellence in Farming (Greater farm efficiency; innovativeness; improved management ability etc.)	→	4. Agricultural Development (Higher levels of food production; higher levels of income; etc.)

The role of n Ach is especially important in developing societies where agricultural development is the goal of national and international programs of change. Consideration of the theoretical model posited previously indicates the great importance of determining the relationship between achievement motivation and excellence in farming (such as innovativeness, farm income, farm efficiency, etc.). This relationship is known to exist for Wisconsin (4) and Ohio (5) farmers, but it needs to be determined under different cultural conditions. If it is found, McClelland (3) has suggested various means of increasing levels of achievement motivation in a developing society, and, hence, of farm production. It appears possible with a long-range program to raise the levels of achievement motivation in a society. At the present time no one has measured achievement motivation among farmers in a developing society such as Colombia.*

*Although one attempt has been made by Dr. A. Eugene Havens in two Colombian communities in 1962-63. He did not use sentence-completion items to measure achievement-motivation as is suggested in the present publication; however, Dr. Havens feels that the achievement motivation variable has great importance in agricultural development, and that it can be measured accurately in a society like Colombia. The authors of the present bulletin are currently directing an investigation of n Ach among Colombian farmers under a grant from the Council of Economic and Cultural Affairs, New York.

Until recent years, measurement of n Ach was possible only by elaborate laboratory methods. The most common of these measures was the Thematic Aperception Test (TAT) which required considerable time, skill, and money for analysis. McClelland (3) measured n Ach by a content analysis of second to fourth grade readers for a number of nations over a 25 year period. Neither of these two methods apply well to field interviewing situations with farmers.

Recently, an attempt has been made to measure the n Ach of U.S. farmers. Morrison (4) devised a method for measuring n Ach by using eight sentence-completion items. These sentence-completions were scored according to a modified TAT n Ach scoring rationale based upon McClelland's work. Morrison correlated n Ach with 29 indicators of excellence in farming. To validate his scale, Morrison administered both the TAT and the sentence-completion scale to a sub-sample of 50 Wisconsin farmers. Similar results were obtained with both methods of measuring n Achievement. He found n Ach to be positively related with several measures of innovativeness,* but the correlations were relatively low, and some were not significant at the five percent level. However, the correlations were generally in the direction hypothesized. Morrison's investigation demonstrated that measurement of n Ach in field interviewing situations with U.S. farmers is possible.

SCALE ANALYSES

Five types of scale analysis should be considered when analyzing the sentence-completion achievement motivation scale.

1. Internal Consistencey

*Innovativeness is the degree to which an individual is relatively earlier in actually adopting new ideas than the other members of his social system.

Internal consistency is the degree to which items in a scale are interrelated, thus indicating the degree to which the items within the scale homogeneously measure the same dimension. A common method of assessing internal consistency is to determine the correlations between each scale item and the total scores.

Internal consistency should be determined before other scale analyses subsequently mentioned. In this manner any items which are not significantly correlated to the total score may be excluded before proceeding to further types of scale analysis.

2. Reliability

A scale is said to be reliable when it will consistently measure the same dimension when applied to the same individuals at different times. One acceptable measure of reliability commonly used is the split-half method, in which the scale items are divided into two subscales. The "odd" and "even" subscales are correlated, and the resulting coefficient of correlation (after correction by the Spearman-Brown formula) is taken as a measure of reliability.

3. Validity

Both the measures of internal consistency and unidimensionality assume that a scale is valid. A scale is valid if it measures the dimension that it is designed to measure. Although it is the most critical quality of a scale, validity is usually the most difficult to determine.

Jury opinion is one indication of validity. A concensus judgement of validity is secured from a group of knowledgeable persons in the field to which

the phenomenan is applicable. Hines (2), Neill (5), and Morrison (4) have reported some evidence that their n Ach scales are valid.

4. Unidimensionality

Unidimensionality means that a series of items comprising a scale measures a single dimension. Unidimensionality allows a ranking of respondents on the basis of total scores so that specific responses to scale items can be "reproduced" by knowing their rank.

Several techniques for testing unidimensionality have been developed. The Guttman method is the most commonly-used technique. If a scale meets Guttman's criterion, each respondent's answer to any scale item can be predicted with 90 percent (or greater) accuracy, if one knows the respondent's total score. Less than 90 percent reproducibility is evidence that the scale may not measure a single dimension.

5. Objectivity

Objectivity is the lack of deviation on the part of one scientist's reading of an instrument from readings made by other scientists. Morrison (4) measured objectivity of the n Ach scale over a period of time. In the present publication, objectivity is measured by inter-judge reliability. Inter-judge reliability is the degree of agreement in the scoring of scale items by different judges at a given period in time.

RESULTS OF SCALE ANALYSES WITH FAYETTE COUNTY, OHIO, DATA

Neill (5) analyzed the n Achievement sentence-completion scale for internal consistency, reliability, unidimensionality, validity, and objectivity. The data came from a sample of 54 farmers in Fayette County, Ohio, who were interviewed in November, 1962.

1. The item-to-total-score correlation coefficients indicating internal consistency for the five item scale* were all significant at the one percent level of significance (see Appendix A).

2. When subjected to the split-half method of measuring reliability, a coefficient of reliability of .457 for the five item scale was obtained, which is significant at the one percent level. However, this level of reliability leaves much room for improvement, which may be accomplished by the addition of further items.

3. Evidence for validity of the n Achievement scale was indicated by the jury opinion method in the studies completed by Morrison (4) and Hines (2), but could not be determined in the Fayette County, Ohio, study.

4. The Guttman test of unidimensionality yielded a coefficient of unidimensionality of 87 percent, which is less than the 90 percent level usually accepted as the criterion for unidimensionality. However, the present level of 87 percent approach 90 percent, thus, the present scale is a "quasi-scale."** It is believed that with some further refinement the scale would meet the 90 percent criterion outlined by Guttman.

5. The correlation coefficients of inter-judge reliability for four judges were significant at the one percent level, which is some indication of objectivity in scoring (see Appendix B).

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*Two of the seven items in the Morrison (4) version of the N Ach scale were discarded in the Ohio investigation due to low item-to-total score correlations.

**A "quasi-scale" is one with a coefficient of reproducibility of more than 85 percent but less than 90 percent. It has some evidence of unidimensionality.

SCORING PROCEDURE*

The system of scoring the sentence-completion achievement motivation scale is based on an expressed concern with occupational performance, or a "...concern with success in competition with some standard of excellence in occupational performance" (4, p. 191). Levels of scoring each item for each respondent are weighted respectively 0, 1, 2, and 3 points. Higher scores indicate on "outright" concern with achievement or success in competition with a standard of excellence or evaluation... "for occupational performance or total or specific occupational endeavors and/or instruments or environments closely related to occupational endeavors" (4, p. 191). It is important to remember that only occupational achievement motivation among farmers is measured in the present study.

The lowest score (0) indicates that the scale-item contains a response that is classified as unrelated to achievement in occupational performance. In other words, the response has no implication of any concern with occupational achievement.

A score of "1" indicates that the response implies only achievement per se and does not explicitly state a concern for achievement. In other words, n Ach is only implied.

A score of "2" indicates that the respondent is concerned directly with achievement-performance in regard to his occupation. He is concerned with outright success or achievement in competition with others.

The highest score (3) indicates that the respondent is concerned with outright success in regard to his occupation and that he explicitly states in the response a "need to achieve" in his occupation.

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*Adopted, with modifications, from Morrison (4, Appendix).

OUTLINE OF SCORING AND RATIONALE FOR SCORING*

The following outline gives the scorer a schema by which he can determine a respondent's degree of need for achievement. The number indicated is the score (0, 1, 2, or 3) or level of n Ach, while the letter indicates the primary rationale for the score. The rationale letters may be useful in re-scoring the n Ach protocals at a later date, when a recheck of the scoring rationale is desired. Thus, it is possible to analyze differences in types of N Ach among respondents, as well as correlates of their degree or amount of n Ach.

Score "0". Unrelated Response (Other goals than n Ach)

a. Freedom, independence, patriotism, democracy, citizenship, power, leadership, dominance.

b. Material affairs such as health, profit, price prosperity, wealth, acquisition, ownership, security, material comfort, debt, selling, taxes, other.

c. Association, affiliation, response, familism, fellowship, sex.
d. New experience, thrills, pure affect.
e. Ethical, religious, spiritual, altruistic.
f. Non-evaluated performance.
g. Other.

Score "1". Implicit Achievement-Performance

a. Newness or moderness concern.
b. Meticulousness and efficiency concern.
c. Intensity, eagerness, perserverance, industry, or ambition concern.
d. Knowledge concern.
e. Size and quantity concern.
f. Performance difficulty concern.
g. Other.

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*Adopted, with modifications from Morrison (4, Appendix).

Score "2". Explicit Achievement-Performance

a. Explicit achievement-performance goals indicated by such key words* as: bad, good, excellent, better, best, worst, worse, success, fail, win, lose, progress, advancement, get ahead, fall behind, keep up, improve, fine, nice, wonderful, ideal, beautiful, well, poor, might, wrong, alright, OK, average, mediocre, proper, etc.

b. Unique accomplishment goals.
c. Other explicit achievement-performance goals.

Score "3". Need for Achievement**

a. Examples of key words indicating need for achievement are: need, desire, want, try, strive, etc.

Following are some examples of responses illustrating the scoring techniques and their rationale.***

0. Unrelated Response (Other goals than n Ach)	Score-Rationale
I felt most dissatisfied with the price of hogs.	0 - b
The ideal man is an honest man that can get along with people.	0 - e
A good farmer should attempt to keep from becoming or going too far in debt.	0 - f
I used to daydream about helping others.	0 - c
1. Implicit Achievement-Performance	
A farmer today should plan ahead.	1 - b
A good farmer is a hard worker.	1 - c
A farmer today should get his crops in on time.	1 - b

*Key words should be adjectives of the main idea in the completion part of the sentence.

**The n Ach score of "3" can only be scored when explicit achievement-performance (a score of "2") is also present.

***For a more complete analysis, see Morrison (4, p. 191).

2. Explicit Achievement-Performance	Score-Rationale
The ideal man does his work right.	2 - a
The ideal man will succeed.	2 - a
A farmer today should do the best job he can.	2 - a
3. Need for Achievement	
A good farmer tries to adopt all the best practices.	3 - a
A 400 acre farm is nearly the minimum acreage for the average farmer to try to farm with a complete line of equipment.	3 - a

Appendices C and D contain examples of protocols from a farmer having high n Achievement, and from a farmer having low n Achievement. Both examples are taken from Neill's (5) study in Fayette County, Ohio.

CORRELATES OF ACHIEVEMENT MOTIVATION WITH INDEPENDENT VARIABLES

Achievement motivation has been measured in two different samples of farmers in Ohio. The first study was conducted in Fayette County, Ohio, among 54 farmers, and the second was a state-wide, random sample of 79 Ohio farmers. Table 1 shows 14 independent variables correlated with n Achievement in these studies.

All correlations were in the direction hypothesized. In the Fayette County data one of the variables was significant, and for the state-wide Ohio sample, five variables were significant.

Table 1. Product-moment Correlations of Achievement Motivation with 13 Independent Variables

Independent Variable	Correlations with n Ach for Fayette County, Ohio Sample (N=54)	Correlations with n Ach for Statewide Ohio Sample (N=79)
1. Production man work units	.245	.226*
2. Man days of labor on the farm	.118	.298**
3. Number of acres in the farm	.157	.240*
4. Number of acres owned	.181	.107
5. Production man work units per man day of labor	.298*	.129
6. Production man work units per acre	.180	---
7. Farm management rating score	.252	---
8. Gross farm income	.185	.190
9. Number of days of off-farm work	-.085	-.191
10. Age of farmer	-.225	-.254*
11. Number of years the farmer has operated his farm	-.113	-.251*
12. Years of education of farmer	.149	.152
13. Innovativeness	.254	.134

*Significant at the five percent level.

**Significant at the one percent level.

FUTURE RESEARCH

Needed Future Research in the United States

1. Farmers still represent a relatively unexplored population regarding research on achievement motivation. Correlates of achievement motivation that might be investigated are:

a. Levels of agricultural production efficiency (e.g., bushels of corn raised per acre, number of pounds gained per pound of feed fed to livestock, cost per pound of gain in livestock, etc.). The most highly correlated variable with n Achievement in Neill's Fayette County study (5) was production man work units per man day of labor, which indicated that achievement motivation is significantly correlated with a measure of farm labor efficiency. However, since only one adequate measure of farm efficiency was included in Neill's study, future research is needed to examine other correlates of farm efficiency with achievement motivation.

b. Aspirations for childrens' future education. Achievement motivation involves the desire to excell. Formal education is one of the most important tools in assisting one to excell in his or her occupation. Therefore, it is felt by the authors that farmers who recognize the need for high levels of education in our highly competitive society, are probably high in n Achievement. Therefore, if the farmer-father is achievement motivated, he will likely instill in his offspring a need for an advanced education.

c. Age. Apparently, the correlation between age and achievement motivation among farmers may be curvilinear and not linear, if it is present at all.

d. Level of living indices. Certainly, achievement motivated persons should have more material goods than persons possessing lower levels of n Achievement, even though their ends are not theoretically for hedonic supremacy but rather the desire to attain maximum satisfaction by being able

to reach desired goals. Therefore, possession of material goods may be one result of high levels of achievement motivation.

e. Innovativeness. It is important to determine the adopter category with highest levels of achievement motivation (i.e., innovators, early adopters, early majority, late majority, or laggards). Adoption of new farm practices should certainly be one expression of n Achievement among farmers, but the correlations in the two Ohio studies (Table 1) were not significant, although positive.

f. Religion. Some religions are noted for their high achievement motivation (for example, Jews) and others for their more fatalistic attitudes. Evidently, values on achievement motivation are, in part, implanted through religious training.

g. Childhood training. If n Achievement is instilled in the individual during the socialization process, the acts surrounding this process are important to investigate. Are there common characteristics that surround the socialization of those with high levels in contrast to those who have low levels of n Ach? McClelland (3) suggests the answer is "yes."

2. Neill's study (5) was concerned with a selected sample of farmers in Fayette County, Ohio. Fayette County is noted in Ohio for its relatively progressive and successful agriculture. The problem is that a narrow range of talents were represented in the sample. A large-sized, statewide, cross-section, random sample would be preferred in a study of the present type. The range of talent in the Fayette County study was so narrow that correlations were of lower magnitude. Research conducted in areas of lesser agricultural development in the U. S. could prove especially valuable in preparing for a similar study in an underdeveloped country.

3. The n Achievement sentence-completion scale employed by in the present study included only five items. The scale needs both refinement and many more items. One desirable result would be a higher level of scale reliability. Some suggested items for addition include:

a. To grow 150 bushels of corn per acre one must _____.

b. If I became partially disabled, I would _____.

c. I lack _____.

d. What my farm lacks is _____.

e. Farms with less than 100 acres are _____.

f. To get ahead in farming today one must _____.

4. It should not be concluded that methods of measuring n Achievement among farmers should be limited to sentence-completion stimuli. Certainly, the sentence-completion scale is promising, but the exploration of other methods needs future consideration. Some suggested methods would include (a) flash card stimuli, (b) verbal stories from respondents on n Achievement subjects, and (c) modified TAT's. One approach to the utilization of these measures would be to use all of them with a sample of farmers, and then intercorrelate the results with the sentence-completion scale.

5. Past research on achievement motivation has dealt mainly with youthful samples and especially college students. The definition of achievement motivation in no way implies such a limitation on the concept. Such occupational groups as farmers, salesmen, public relations personnel, teachers, researchers, lawyers, ad infinitum, are possible subjects for research on achievement motivation.

6. In certain occupations, perhaps the level of n Ach of the wife is also important. Perhaps, for example, a farmer with low n Ach who is married to a wife with high n Ach will have relatively high farm efficiency, innovativeness, etc.

Implications for Research in Developing Countries

One of Neill's (5) purposes in his study was to lay the ground work for a similar scale that can be used cross-culturally in field situations in a developing society. Paramount in developing an n Ach scale for different cultural conditions is to re-analyze the scale items after translation to another language and culture to assert that the scale possesses adequate validity, reliability, internal consistency, unidimensionality, and objectivity. Using the TAT measure with a subsample as a validity check on the sentence completion scale, is one method to ascertain that the sentence-completion scale actually measures n Achievement in a different culture. The TAT has previously been used by Hagen (1) in Colombia, but the sentence-completion scale for n Achievement has not been used outside of the United States. Another measure of validity is the possibility of using known groups.

Certainly, some of the most important factors that should be considered when measuring n Achievement in a developing society are the relationships between achievement motivation and such factors as religion, innovativeness, and the others listed previously for further research in the United States.

The most appropriate concluding remark that could be made about the use of achievement motivation in a developing society was made by Morrison (4, p. 141).

> Achievement motivation is...a characteristic of personality, and the tenets of a democratic society, particularly at a time when the society is involved in a crucial struggle for supremacy with a conflicting system would seem to give warrant enough for the expenditure of research effort aimed at the discovery, development and utilization of persons motivated to achieve.

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APPENDIX A

INTERNAL CONSISTENCY OF ITEMS IN THE ACHIEVEMENT MOTIVATION SCALE (ITEM-TO-TOTAL SCORE CORRELATIONS) IN FAYETTE COUNTY, OHIO

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INTERNAL CONSISTENCY OF ITEMS IN THE ACHIEVEMENT MOTIVATION SCALE (ITEM-TO-TOTAL SCORE CORRELATIONS) IN FAYETTE COUNTY, OHIO

Scale Items	Coefficient of Correlation*	
	Seven Item Scale	Final Five Item Scale
A. A farmer today should...	+.581	+.561
B. A good farmer...	+.616	+.656
C. A 400 acre farm...	+.442	+.442
D. The ideal man...	+.475	+.474
E. I felt most dissatisfied with...	+.121	———
F. Most of all I want...	+.081	———
G. I used to daydream about...	+.461	+.482

* A correlation of .354 is required for significance at the 1 per cent level.

APPENDIX B

PRODUCT-MOMENT CORRELATION COEFFICIENTS, MEANS, AND STANDARD DEVIATIONS FOR INTER-JUDGE RELIABILITY OF TOTAL SCORES FOR THE ACHIEVEMENT MOTIVATION SENTENCE-COMPLETION SCALE IN FAYETTE COUNTY, OHIO

APPENDIX B

PRODUCT-MOMENT CORRELATION COEFFICIENTS, MEANS, AND STANDARD DEVIATIONS FOR INTER-JUDGE RELIABILITY OF TOTAL SCORES FOR THE ACHIEVEMENT MOTIVATION SENTENCE-COMPLETION SCALE IN FAYETTE COUNTY, OHIO

Scorer	Scorer 1	2	3	4	5
1	---	+.746	+.628	+.840	+.804
2		---	+.535	+.645	+.492
3			---	+.650	+.642
4				---	+.746
5					---
Mean	3.5	4.2	3.2	3.5	3.2
Standard Deviation	1.9	2.1	1.9	1.9	2.0

APPENDIX C

AN EXAMPLE OF A RESPONDENT SCORING HIGH IN ACHIEVEMENT MOTIVATION

APPENDIX C

AN EXAMPLE OF A RESPONDENT SCORING HIGH IN ACHIEVEMENT MOTIVATION

		Score - Rationale
A.	A farmer today should try to be efficient in his farming operations.	3 - a
B.	A good farmer joins a good farm organization.	0 - c
C.	A 400 acre farm is not big enough, for the amount of machinery I own, to be efficient.	1 - b
D.	The ideal man works hard to get ahead in his business.	2 - a
E.	I used to daydream about having the neatest, most beautiful farmstead in the state.	2 - a
	Total n Ach Score	8

APPENDIX D

AN EXAMPLE OF A RESPONDENT SCORING LOW IN ACHIEVEMENT MOTIVATION

APPENDIX D

AN EXAMPLE OF A RESPONDENT SCORING LOW IN ACHIEVEMENT MOTIVATION

	Score - Rationale
A. A farmer today should eat, drink, and be merry.	0 - d
B. A good farmer is happy.	
C. A 400 acre farm is too big for me to farm.	1 - e
D. The ideal man is over six foot tall.	0 - g
E. I used to daydream about being a millionaire.	0 - b
Total n Ach Score	1